

# **Why the Exclusive Use of Large Licenses in the Upper or Lower 700 MHz Bands Would Reduce the Efficiency of the 700 MHz Auction**

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## INTRODUCTION

Determining the correct configuration of license blocks is a critical issue that will greatly influence the character and success of the upcoming 700 MHz auction. The lessons of the AWS auction include the importance of including smaller licenses to provide the building blocks needed to meet the demands of a variety of bidders and to allow entities with alternative business models to compete in the auction. In response to earlier SpectrumCo submissions in the Commission's 700 MHz proceeding, Professor Cramton argues in a recent paper filed on behalf of Verizon Wireless that "there are no benefits that will offset the considerable costs of SpectrumCo's proposed band plan."<sup>1</sup>

This sweeping assertion is simply not true. There are many benefits from including smaller licenses in both blocks of the upcoming 700 MHz auction, including bringing in the demand of smaller bidders and allowing the demand of larger bidders to be more accurately reflected in the set of licenses on which they bid.<sup>2</sup> Furthermore, neither Professor Cramton nor any other commenters in the 700 MHz proceeding have demonstrated the so-called "costs" of SpectrumCo's band plan. Indeed, Professor Cramton confuses transaction costs of aggregation in the *post-auction* market with unproven aggregation "costs" *within* an auction. While discussion of aggregation risk is valid, AWS auction experience demonstrated the risk is small and any discount for it is unproven. Moreover, the so-called "border issue" raised only in Professor Cramton's paper is efficiently handled within an auction.

Based upon the success of the AWS auction, SpectrumCo has submitted detailed analyses that support the adoption of a mix of license areas, including REAGs, EAs, and CMAs, for the 700 MHz auction. In particular, SpectrumCo's analyses demonstrate the efficiency and flexibility to meet a variety of business models derived from a band plan including mostly EA-sized license blocks in both the upper and lower 700 MHz band. In response, Professor Cramton concludes that anything other than REAG license blocks is inefficient and that the 700 MHz band plan should be fashioned to meet the needs of only the largest bidders interested in the largest bidding blocks. Clearly this is not what was intended by Congress when it directed the FCC to hold auctions that provide for "an equitable distribution of licenses and services among geographic areas" and that "avoid[ ] excessive concentration of licenses . . . by disseminating licenses among a wide variety of applicants . . . ."<sup>3</sup> Nor is it necessarily the most efficient auction design.

In support of his proposition, Professor Cramton argues that 1) smaller license areas encourage speculation; 2) smaller license areas prevent efficient aggregation; 3) smaller license areas are inconsistent with band plans adopted in other countries; and 4) risk premiums are problematic. The discussion below explains why each of these arguments is flawed and should not influence the FCC's determination of the band plan for the 700 MHz band.

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<sup>1</sup> Peter Cramton, *Why Large Licenses Are Best for the 700 MHz Spectrum Auction*, WT Docket No. 06-150, (submitted Apr. 17, 2007) ("Cramton Comments"), at 16.

<sup>2</sup> To the extent that bidders' demands for the Upper and Lower 700 MHz Bands are not interchangeable, the arguments herein for smaller license blocks apply separately to each band.

<sup>3</sup> See 47 U.S.C. § 309(j)(4)(C)(i), (j)(3)(B).

## SMALLER LICENSE AREAS DO NOT ENCOURAGE SPECULATORS

Professor Cramton states that smaller licenses create the opportunity for gaming and therefore decrease the efficiency of the auction by allowing bidders to purchase licenses solely for the purpose of later flipping those licenses to a large licensee.<sup>4</sup> While theoretically possible, it is unclear, and unexplored by Professor Cramton, why an operator would not simply purchase the license in question during the auction, or why the operator would pay more after an auction than it would be willing to pay for the same license during the auction.<sup>5</sup>

Furthermore, so-called speculators have at times played an important role in FCC auctions. For example, Craig McCaw's participation in the A & B Block PCS auction was credited with increasing both revenues and the efficiency of the auction.<sup>6</sup> He was able to participate at a fairly low cost because licenses were not excessively large.<sup>7</sup> Consequently, as Professor Cramton has argued, the ability of smaller bidders such as Craig McCaw to participate in the auction increases, rather than reduces, auction efficiency.

## SMALLER LICENSE AREAS DO NOT PREVENT EFFICIENT AGGREGATION

Professor Cramton also argues that significant secondary market consolidation was necessary to create the highly beneficial national networks that major wireless operators have today.<sup>8</sup> The fact that national networks are efficient and beneficial is not an argument against smaller local and regional networks or smaller license sizes. The fact that small networks have not been entirely aggregated indicates there is still a role for non-national wireless networks. Moreover, smaller license blocks also inure to the benefit of national operators who may be looking to strategically add spectrum through the auction process. For example, in the AWS auction Verizon Wireless purchased one EA and several CMA licenses in and around Louisiana rather than purchase the REAG license that included these EA and CMA markets. Presumably, Verizon Wireless had the resources to purchase the entire REAG, but the carrier's limited demand in these areas apparently made it more efficient for Verizon Wireless to purchase EA and CMA licenses.

Without question, reliance upon secondary markets to construct a nationwide footprint significantly raises transaction costs by increasing the number of transactions needed to aggregate licenses in bilateral negotiations. But avoiding those transaction costs is precisely why the FCC implemented the Simultaneous Multiple Round (SMR) auction format to replace

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<sup>4</sup> See Cramton Comments, at 1 ("Speculator strategies to create holes in an operator's footprint and then sell the spectrum to that operator post-auction are also more effective.").

<sup>5</sup> The only rational explanation for this behavior would involve demand reduction. See Lawrence M. Ausubel and Peter Cramton, *Demand Reduction and Inefficiency in Multi-Unit Auctions*, Working Paper, University of Maryland, Jul. 27, 2002, at 27-28.

<sup>6</sup> See Peter Cramton, *The PCS Spectrum Auctions: An Early Assessment*, Working Paper, University of Maryland, Aug. 25, 1995 ("Cramton (1995)"), at 21 ("McCaw's presence was important not only to raise revenue for the government, but also in reducing the possibility of successful tacit collusion.").

<sup>7</sup> *Id.* ("By putting down just \$33 million in earnest money, McCaw gained eligibility to bid in many large markets. At almost no cost (the lost interest on the \$33 million upfront payment), McCaw was buying the option to step in and snatch licenses that were under priced because of a lack of competition.").

<sup>8</sup> Cramton Comments, at 2-6.

lotteries in distributing initial license assignments. The transaction costs of license aggregation are avoided when licenses are aggregated *within* an auction, as would be the case with the proposals regarding the 700 MHz band license sizes. Similarly, a properly structured auction also avoids the transaction costs associated with post-auction *disaggregation*. Such costs might indeed be imposed under Verizon Wireless's REAG proposal. Auctioning primarily EA licenses, as suggested by SpectrumCo,<sup>9</sup> addresses both potential disaggregation costs that would be associated with larger REAG license areas and potential aggregation costs that would be associated with smaller CMA license areas.

#### U.S. SPECTRUM POLICY SHOULD REFLECT U.S. MARKET CONDITIONS

Professor Cramton notes that “[n]early all countries [other than the United States] award nationwide licenses or large regional licenses.”<sup>10</sup> The decision whether or not to offer only national or large regional licenses is made by each country within the context of the country's telecommunications market. Many distinctions exist between the U.S. and other countries. Most obviously, the U.S. is large and more populous than most of the other countries cited by Professor Cramton. To our benefit, we have taken a more market-oriented approach to regulation. Unlike many other countries, the U.S. has not tried to pick technical standards for mobile phone operators, and since lifting the spectrum cap, the FCC has not tried to preemptively set the market structure of mobile phone operators. Similarly, the FCC has not tried to bias auction outcomes for certain operators by only using large license blocks, nor should it here for the 700 MHz auction.

#### RISK PREMIUMS ARE NOT NECESSARILY INEFFICIENT

Professor Cramton asserts that “A Significant Aggregation Risk Premium Was Paid for REAG Licenses,”<sup>11</sup> but he fails to demonstrate the validity of this statement. He reports that the CMA licenses (734 to cover the U.S.) sold at a 41% discount to the REAG licenses (12 to cover the U.S.) and that the EA licenses (176 to cover the U.S.) sold at a 32% discount.<sup>12</sup> The mere statement of price, however, does not explain how much of these price differences are due to an aggregation risk premium, or whether other factors are at play. The evidence indicates that aggregation risk premium is not likely to be the main driver for these price differences.

Aggregation risk premiums can exist in two dimensions. The first is the geographic dimension that Professor Cramton discusses, in which a bidder that values a large geographic footprint will pay a premium to purchase a single large license and avoid the risk that it will be unsuccessful in buying the complete package of smaller licenses that the bidder desires. The second dimension, which Professor Cramton ignores in his analysis, is the spectrum dimension, in which a bidder has demands for a quantity of spectrum that requires aggregating two or more licenses covering a given geographic area. In this case, a bidder will pay a premium for a single larger license (say,

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<sup>9</sup> Coleman Bazelon, *Principles for Choosing 700 MHz Block License Sizes*, WT Docket No. 06-150 (submitted Mar. 6, 2007), at 2-3.

<sup>10</sup> Cramton Comments, at 7.

<sup>11</sup> Cramton Comments, at 9.

<sup>12</sup> *Id.*

20 MHz) to avoid the risk of unsuccessfully attempting to buy two smaller licenses (say, 10 MHz each).

By only reporting average prices over each license geographic size (CMA, EA, REAG), Professor Cramton omits any discussion about the differences in prices paid for the 10 MHz versus 20 MHz licenses in the AWS auction. Measuring the risk premium for bandwidth tells an ambiguous story about risk premiums. The B block (20 MHz) and C block (10 MHz) EA licenses covered identical geographies and only differed in the amount of bandwidth they included. The measured risk premium for the 20 MHz B block over the 10 MHz C block is actually *negative* 19%, implying a spectrum aggregation discount rather than premium. The measured spectrum aggregation premium for the REAG F block (20 MHz) over the REAG D & E blocks (10 MHz each) was 18% and 21% respectively. This ambiguity indicates that any spectrum aggregation risk premium that may exist was likely overwhelmed by other influences on price.

Professor Cramton's analysis also does not attempt to measure how much, if any, of the price difference between different-sized licenses is associated with the geographic aggregation risk premium. To make an "apples-to-apples" comparison of prices it is important to distinguish between the 10 MHz and 20 MHz licenses. The price discount for the B block licenses (20 MHz, EA) as compared to the F block licenses (20 MHz, REAG) is 41%. However, the price discounts for the C block licenses (10 MHz, EA) from the prices of the D & E block licenses (10 MHz, REAG) are only 12% and 15% respectively. Without any theory to explain why the geographic aggregation risk premium would be different for 10 MHz versus 20 MHz licenses, one can only conclude that at the very most the geographic aggregation risk premium was 12% to 15%.<sup>13</sup> The remainder of the price difference between the price of the F block and B block licenses must be caused by something other than the geographic aggregation risk premium.

The entire price difference between the large REAG licenses and the smaller EA and CMA licenses may be explained by bidder expectations. For numerous reasons—including the design of SMR auctions and rational bidder strategies—larger, more expensive licenses tend to be more active earlier in the auction and, in the case of the AWS auction, reach their final prices before smaller, less expensive licenses. One consequence of this in the AWS auction was that bidders stopped bidding on REAG licenses at a time when EA and CMA licenses were significantly cheaper, without knowing the final prices those smaller licenses would reach. If total realized auction demand is somewhat less than expected, as was likely in the AWS auction,<sup>14</sup> then a price difference would emerge, even absent any geographic or spectrum aggregation risk premium.<sup>15</sup>

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<sup>13</sup> As described in the next paragraph, even this measure of price difference is almost certainly an overestimate of the aggregation risk premium.

<sup>14</sup> "Expect bids of \$30 billion (range of \$10-\$50 billion); expectations hover near \$15 billion." Tim VandenBerg, Leslie Alperstein and Joe Lieber, "Issues to Watch: 109th Congress," Washington Analysis, May 24, 2006, at 7.

<sup>15</sup> This is consistent with the so-called "Afternoon Effect," whereby prices observed early in bidding are likely to be inflated and prices observed nearer to the close of bidding are closer to true market value. Paul Milgrom and Robert Weber, *A Theory of Auctions and Competitive Bidding, II The Economic Theory of Auctions*, (Paul Klemperer ed., Edward Elgar Publishing 1999) at 179-194. To the extent that Verizon Wireless's proposal for only large license areas eliminates the inflation of prices early in the auction, it would be reasonable to expect total revenues to be reduced.

To the extent there is a geographic aggregation risk premium, however, that does not imply any inefficiencies in the auction or even necessarily a reduction in overall auction revenues. As SpectrumCo's experience demonstrated, EA-sized licenses are not an impediment to large geographic aggregations within an auction.<sup>16</sup> The only so-called harm would be that SpectrumCo paid less than bidders who purchased REAGs. The portion of the price difference that was associated with a geographic aggregation risk premium represents an insurance premium that those bidders paid and SpectrumCo chose not to pay—in essence, SpectrumCo chose to self-insure against geographic aggregation risk.

It is also incorrect to interpret the price discounts for smaller licenses as lost revenue from the auction. It is tempting to view the 32% price discount for EAs compared with REAGs that Professor Cramton reports<sup>17</sup> as revenue that could have been captured by the auction if the EAs had been licensed as REAGs. This argument would suggest that if all of the spectrum in the AWS auction had been sold as REAGs, the average price of all spectrum would have remained at the average REAG price of \$0.66 per MHz-pop and, therefore, total auction revenues would have reached \$17.0 billion instead of \$13.7 billion. This view is incorrect. If the supply of REAG licenses had been larger, the price they sold at would have been lower and overall auction receipts could have gone up or down.<sup>18</sup>

#### CMA AND EA AGGREGATION IN THE AWS AUCTION INDICATES THAT SMALLER LICENSE AREAS BENEFIT ALL BIDDER TYPES

Professor Cramton analyzes the AWS auction to show that some bidders with large geographic demands met those demands by aggregating smaller licenses. He notes that this implies that some bidders who purchased aggregations of CMA and EA licenses could have met their demand with REAG licenses. This point is true, as noted by SpectrumCo in an earlier paper submitted in this proceeding.<sup>19</sup> The existence of the larger demands does not necessarily demonstrate the lack of interest in smaller licenses. The point of the SMR auction is to find the right allocation of licenses and allow the auction process to determine the right mix of large and small license footprints. In fact, Professor Cramton's Table 2 demonstrates how bidders were successful in aggregating smaller licenses. This seems to be strong evidence that AWS license configuration was successful at meeting large bidders' demands without precluding bidders with smaller demands from participating in the auction and ultimately winning licenses.

Professor Cramton notes that Wireless DBS providers stopped bidding on day four of the auction and that they did not pursue a CMA or EA strategy.<sup>20</sup> At the time they ceased bidding on REAG

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<sup>16</sup> Coleman Bazelon, *The Economics of License Sizes in the FCC's 700 MHz Band Auction*, WT Docket No. 06-150 (submitted Jan. 8, 2007), at 8-9.

<sup>17</sup> Cramton Comments, at 9.

<sup>18</sup> The exact amount of revenue change would have reflected the net effect of several factors, including the geographic and spectrum aggregation risk premium, if any remained absent smaller license sizes; the reduced demand from the bidders that had smaller demands who would not participate; and the activity of remaining bidders with large demands, but budgets that would not support increased payments in the auction.

<sup>19</sup> Bazelon, *supra* note 16, at 8.

<sup>20</sup> Cramton Comments, at 12-13.

licenses the average price of REAGs was \$0.38 per MHz-pop—little more than half the final REAG prices and well below pre-auction expectations for final auction prices. In addition, bidding on REAG licenses was very robust at the time of the Wireless DBS departure, indicating prices would continue to rise. Consequently, it is clear that Wireless DBS providers left the auction because prices got too high for their budgets.

#### “BORDER PROBLEM” IS SOLVED WITHIN THE AUCTION

Finally, Professor Cramton asserts that “[s]maller license sizes inevitably create additional borders.”<sup>21</sup> While this may be true, the scope of the problem is probably much smaller than suggested because borders need not increase significantly when smaller licenses are aggregated within an auction. SpectrumCo’s experience in AWS proves this to be true. The number of external borders resulting from its aggregation of 137 licenses covering 260.5 million people is not significantly different than it would be if SpectrumCo had purchased the 6 REAG licenses covering the entire continental U.S. In addition, most of the additional borders are in low population areas where the “costs” of borders are relatively low.<sup>22</sup> Furthermore, in an SMR auction bidders efficiently deal with any potential border “costs” by considering those costs when comparing the price of a license in a given band with the price of a license in a substitute band. Notably, Professor Cramton’s border analysis omits any discussion about the increased borders that would result from the post-auction spectrum disaggregation that would be needed to meet the demands of smaller operators, as advocated in this proceeding by Verizon Wireless and others.<sup>23</sup> Accordingly, the border problem is terribly insignificant, especially when weighed against the cost of shutting out smaller operators from the auction.

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<sup>21</sup> Cramton Comments, at 13.

<sup>22</sup> Bazelon, *supra* note 16, at 8-9.

<sup>23</sup> See, e.g., Comments of AT&T Inc., at 10-11 (filed Oct. 5, 2006); Comments of Cingular Wireless LLC, at 8 (filed Oct. 5, 2006); Replies of Verizon Wireless, at 4-5 (filed Oct. 20, 2006).